



Enabling a Sustainable AI Future

Financial Solutions
as a Catalyst

An insights paper developed by



Supported by the SMBC roundtable discussion on “*Navigating an AI-driven future powered by sustainable energy and water solutions*”

Contents

EXECUTIVE SUMMARY.....	02
INSIGHTS FROM THE ROUNDTABLE.....	05
Access to Energy and Water.....	06
Design and Innovation.....	08
Evolving Regulatory Landscape.....	10
Collaboration and Multi-Sector Partnerships.....	12
Financing Sustainable AI Infrastructure.....	14
FINANCIAL SOLUTIONS AS A CATALYST.....	16
Understanding Specific Financing Needs.....	17
One-Stop Solutions Provider.....	18
Ability to Leverage Loan Capital Markets.....	19
Sustainable Finance Solutions.....	20
New Energies and New Technologies.....	21
LOOKING AHEAD.....	22
ABOUT THE REPORT.....	25

Executive Summary

Balancing AI growth sustainably

Although the field of Artificial Intelligence (AI) has been evolving for decades, the widespread public interest and rapid development of AI large language models accelerated in 2023 following OpenAI's November 2022 announcement of ChatGPT.⁽¹⁾

The past two years have seen Big Tech companies and startups alike raising increasingly staggering sums for AI development and research, with the support of investors also racing to capitalize on what is considered by some as the next industrial revolution.

As AI adoption accelerates, the demand for the physical infrastructure, energy and natural resources necessary to power AI development is also growing at an unprecedented pace. The emergence of AI has fueled concerns that AI-driven data center growth could exacerbate the global climate crisis and water scarcity in vulnerable regions.

In their 2025 report *Energy and AI*, the International Energy Agency (IEA) highlights that data centers currently account for 0.5% of combustion emissions globally – i.e., indirect emissions resulting from data center electricity consumption. Over the course of the next decade, this may grow by up to 2.5 times in the Lift-Off Case which assumes stronger growth in AI adoption and represents the largest emissions growth among all sectors.⁽²⁾

At the same time, there are high hopes for AI's potential to open the door to a new generation of technological break-throughs aimed at reducing energy and water consumption.





Asia Pacific digital growth drivers

In the Asia Pacific, data center growth is amplified by the needs of a young and tech-savvy consumer base, coupled with rapid digitalization. The expansion of AI and digital services in Southeast Asia is driving significant expansion in data center infrastructure, with the region's internet users already exceeding 460 million, and a digital economy expected to nearly triple to US\$1 trillion by 2030.^{(3) (4)}

Markets in Southeast Asia have benefitted from growing internet penetration, favorable policies, and investments from global tech companies – collectively positioning the region as a dynamic and fast-growing data center hotspot.

Johor, Malaysia, is a notable example. The state is rapidly becoming an AI data center hub in the region, with plans to expand data center capacity from the current estimated 580 MW to 5,800 MW by the end of the decade.⁽⁵⁾ Capitalizing on abundant land, affordable energy, and water resources, Johor aims to establish itself as a regional digital innovation leader.

Across the causeway, in Singapore, the government plans to increase data center capacity by more than one-third to meet rising demand driven by digitalization and AI services.⁽⁶⁾ However, the island nation faces challenges from limited land availability and clean energy supply constraints. Singapore's data center expansion strategy focuses on balancing its role as a regional digital hub with sustainability.

In Australia, there is close to 1.5 GW of built-out capacity, and this is expected to double in the next decade.⁽⁷⁾ Australia's annual data center investments reached A\$23 billion in 2024 and is projected to grow to A\$40 billion by 2028.⁽⁸⁾

SMBC Ecosperity Week roundtable

SMBC convened a roundtable at Ecosperity Week 2025 to help shed light on the key challenges faced by ecosystem stakeholders in balancing AI growth with sustainability objectives in the Asia Pacific. The roundtable also touched upon the potential role of financial institutions in enabling a more sustainable AI future.

Enabling a sustainable AI future

Roundtable participants identified the following key factors to consider in the drive for a more sustainable AI future:

- Access to energy and water
- Design and innovation
- Collaboration and multi-sector partnerships
- Evolving regulatory landscape
- Financing sustainable AI infrastructure

Financial solutions as a catalyst

AI's rise has also boosted the demand for data center financing. According to a study by McKinsey, data centers will require a cumulative US\$6.7 trillion in capital expenditure worldwide by 2030 to keep pace with the demand for compute power. Data centers built for AI processing are expected to need US\$5.2 trillion in capital expenditures, whereas those supporting traditional IT applications are projected to require US\$1.5 trillion.⁽⁹⁾

To help meet this growing demand, SMBC provides a wide range of tailored financing solutions for clients capitalizing on AI opportunities. Leveraging our deep expertise in energy systems and related financing, SMBC has a key role to play in supporting the sustainable and responsible growth of AI and data centers through our financing solutions.

Insights from the Roundtable



SMBC brought together a group of experts from across multiple sectors for a roundtable session during Ecosperity Week 2025.

Participants included technology players – hyperscalers, data center operators and semiconductor players – alongside suppliers of clean energy and water, as well as investors and financiers.

Access to Energy and Water

Energy Consumption

Hyperscalers such as Google, Amazon and Meta are increasingly embarking on data center projects to meet their growing business needs and dependencies on AI-based tools. Over the coming years, the energy demand emanating from AI can be expected to continue to grow.

According to the IEA, electricity demand from data centers worldwide is set to more than double by 2030 to around 945 terawatt-hours (TWh), slightly more than the total electricity consumption of Japan today.⁽¹⁰⁾

AI is expected to be the main driver, with accelerated servers contributing about 70% of growth in electricity demand from data centers by 2030.⁽¹¹⁾

Roundtable participants discussed efforts to address the rising energy demand. Data center developers and operators are exploring strategies aligned with the energy sector, such as shifting to renewable or carbon-free energy sources. More nascent technologies such as carbon capture are also increasingly being considered as climate change mitigation options.

Demand for Water

Data centers also consume vast amounts of water for cooling purposes. Servers generate intense heat while processing data, and water-based cooling systems depend on water to dissipate this heat.

The corresponding surge in water demand by AI data centers raises concerns because they require up to 10 times more water to operate than non-AI data centers.⁽¹²⁾ If the industry does not adopt more water-efficient technologies, expanding AI infrastructure risks worsening droughts and undermining water security in vulnerable regions.



Availability and location

Considerable focus is expected on ensuring robust energy and water infrastructure to support AI data centers, as meticulous and comprehensive utility planning will be essential to sustain their continuous 24/7 operations.

These issues also illustrate a broader point – sustainable data center operations must also consider location-specific factors, including land use and access to water and other natural resources.



AI and data centers are now driving tremendous renewable energy power demand today, especially in emerging markets.

– *Spencer Low, Head of Regional Sustainability, Google*

Solutions to address water stress in Southeast Asia are critical for sustainable data center growth in the region.

– *Matt Stanelos, Director On-site Services, Veolia South East Asia*

Where AI-ready data centers want to go is not always where renewables are available. Cross-border transfer makes it 10 times harder.

– *Chua Yong Hwee, MD, Energy Nexus, Keppel Limited*

Design and Innovation

Energy efficiency

Data center energy efficiency is crucial to manage the massive power consumption and heat output of AI hardware. High-performance AI data centers demand higher energy densities than traditional data centers. This makes cooling and power distribution the most critical factors for efficient and sustainable operations.



We shift workloads to regions and times when carbon-free energy is available – that’s our map optimization strategy.

– Spencer Low, Head of Regional Sustainability, Google

What we see more and more in the industry is not only AI-driven data centers, but also data centers utilizing AI and digital twin technology to make energy utilization even more efficient.

– Kim Yoon Young, Cluster President, Singapore and Brunei, Schneider Electric

A spectrum of strategies can be employed to boost AI data center efficiency. These can include – for example:

- **Data center design:** Physical design choices can have a significant impact on a data center's efficiency. They can directly influence how effectively the facility manages heat, airflow, power distribution and space utilization.
- **Intelligent power management:** Efficient power delivery systems can minimize energy loss from the grid to the chip.
- **Advanced cooling technologies:** Traditional air cooling is often insufficient for high-density AI environments, whereas liquid cooling methods are more efficient at removing heat directly from the source.
- **Chip design:** At the heart of each data center lies chip design, which is a critical factor that determines energy efficiency, performance and scalability. Some innovators in this space, such as Microsoft, are exploring ways to bring liquid coolants directly inside the silicon using microfluidics technology.⁽¹³⁾
- **AI-driven optimization:** Paradoxically, AI itself can be used to optimize the efficiency of data centers, through predictive analytics, dynamic workload management and intelligent cooling automation.

Water sustainability

Global data center water consumption is projected to reach 1.2 trillion liters/year by 2030.⁽¹⁴⁾ Data center reliance on advanced cooling systems can also lead to excessive water use, posing risks in water-scarce regions.

To enhance water sustainability, efforts should focus on recovery and reuse. In the Malaysian state of Johor, for instance, the first large-scale water reclamation plant dedicated to data centers became operational in 2025. Instead of sourcing water from rivers, the facility treats municipal wastewater which would otherwise be discharged, producing high-grade pure water that can be used for data center cooling processes.⁽¹⁵⁾

Pace of innovation

Some roundtable participants highlighted that the pace of innovation in AI data centers is also becoming a source of concern. A data center can be built with the most advanced technology available at the time, but that technology can become outdated within a few short years. This poses a certain degree of risk for investors.



We now design every site with water recycling as base case. In some locations, we are taking whole campuses off potable supply.

– Rob Lomas, Head of Corporate Development, AirTrunk

Evolving Regulatory Landscape

Ethics and data privacy

Regulators are playing an important role in helping to foster innovation while addressing the ethical risks related to AI – for example, algorithmic bias, data privacy breaches, cybersecurity threats, and the malicious use of generative AI. A diverse and evolving AI regulatory landscape exists across the region, featuring a mix of hard-law mandates, voluntary frameworks, and sector guidance. Most notably, in 2024, the Association of Southeast Asian Nations (ASEAN) published the ASEAN Guide on AI Governance and Ethics to establish common principles and best practices for trustworthy AI in the region.⁽¹⁶⁾

Energy and resources

AI regulations concerning energy and water sustainability in the Asia Pacific are currently fragmented, with a general focus on non-binding frameworks rather than comprehensive legislation. While some countries are developing AI governance policies, explicit environmental considerations, particularly regarding resource consumption by data centers, are still a nascent area of regulation.

The Singapore government actively promotes sustainable data centers through initiatives like the Green Data Centre Roadmap, which was launched in May 2024 to chart a sustainable pathway for the continued growth of data centers.⁽¹⁷⁾ Additionally, the BCA-IMDA Green Mark for Data Centre certification scheme incentivizes operators in Singapore to meet higher sustainability standards, focusing on renewable energy adoption and resource-efficient operations.⁽¹⁸⁾

At the regional level, ASEAN members states have initiated efforts to decarbonize their energy sector, with discussions on how AI and digital growth can align with energy transition goals. This includes supporting initiatives like the ASEAN Power Grid (APG), a regional initiative to connect the electricity systems of members states with the goal to improve energy security, promote economic integration, and facilitate the trade of clean energy.⁽¹⁹⁾



Directly contracting with contestable customers is our first hurdle. Consumers want traceable renewable energy supply, and we seek willing buyer willing seller type of relationships with our customers.

– Grégory Thomassin, Head of Business Development, TotalEnergies Renewables

Nuclear energy

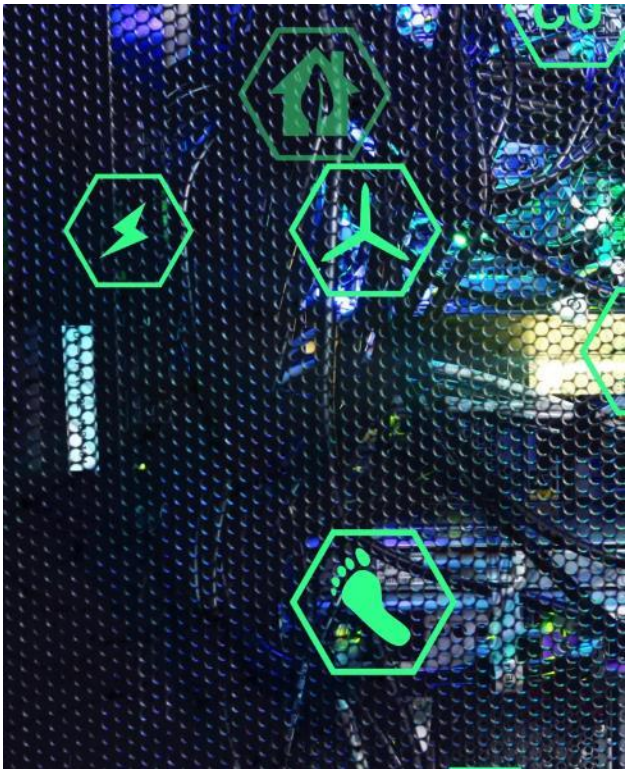
Energy regulators are guiding the region’s energy future by shaping policies and fostering regional integration. Across the Asia Pacific, governments are increasingly interested in the potential of nuclear energy. Small Modular Reactors (SMRs) are gaining attention because they offer scalable, cost-effective and safer alternatives to traditional large nuclear plants.

In 2024, Singapore intensified its exploration of nuclear energy by signing a cooperation agreement with the United States and commissioning a study on advanced nuclear technologies.⁽²⁰⁾ This announcement does not signal a commitment to deploy nuclear power, but rather a long-term effort to build capability and keep options open for a clean energy future.

U.S. CHIPS and Science Act

Regulations in the United States can also affect the future of AI in the Asia Pacific. Signed into law in August 2022 by then-President Joe Biden, the Creating Helpful Incentives to Produce Semiconductors (CHIPS) and Science Act is intended to lure microchip manufacturing back to the United States.⁽²¹⁾

By subsidizing domestic manufacturing, the U.S. CHIPS and Science Act poses both potential challenges and an opportunity for Asian semiconductor companies. While it could "hollow out" the region’s existing production capacity, it also creates an opportunity for Southeast Asian nations like Malaysia and Singapore to strengthen their positions in the supply chain, particularly in assembly and testing.



Collaboration and Multi-Sector Partnerships

Working together on key challenges

The rise of AI is causing a significant surge in energy demand, exacerbating challenges around energy consumption, carbon emissions and grid stress. These are complex challenges that require countries and industries to collaborate and work on sustainable, scalable financing, as well as proactive planning for reliable baseload power to ensure energy security and a smooth energy transition.



“

No single player can tackle these challenges alone and close sector collaboration is essential.

– Katsufumi Uchida,
Head of Asia Pacific Division, SMBC



Addressing the chicken and egg problem

Roundtable participants highlighted a "chicken and egg" problem which can occur in data center partnerships, where one necessary component or party cannot proceed without the other, and vice versa. It is a two-sided marketplace challenge where both supply and demand are needed to build a platform, but attracting one side is difficult without the other already in place.

For example, in a situation between a customer and a developer, the data center developer may face a chicken and egg problem when attempting to secure financing for long-lead equipment (e.g., transformers, GPUs, switchgear). The developer cannot secure financing without signed leases from customers (tenants), but major customers like hyperscalers are generally reluctant to commit without proof that the necessary equipment is secured, and the data center can be delivered on time.

One way to address this dilemma is by having a strong equity backer from the start, which allows the developer to pre-purchase long-lead items. This demonstrates a serious commitment and de-risks the project for potential tenants. Alternatively, some large tenants may bring their own equipment inventory, making the deal more attractive to data center developers. Strategic partnerships can also offer a path forward – e.g., the developer can curate their investor base to include suppliers of the long-lead items, thus ensuring that the hardware can be secured early in the process.

Green design, green operations and green energy are the three pillars of our data center projects. It's critical to collaborate with customers across this journey in view of our respective decarbonization goals.

– Vinamra Srivastava, Chief Sustainability & Sustainable Investments Officer, CapitaLand

The evolution of the AI space has really taken off quite significantly. We have seen regulators getting involved. We have seen corporations and hyperscalers getting involved in this picture, and we are seeing the startup space coming in as well.

– Kavickumar Muruganathan, Cloud ESG Planning Director, Microsoft

Financing Sustainable AI Infrastructure

Investment decision-making

Investment decisions increasingly require a clear renewable energy plan. This was an observation made by some roundtable participants, with some capital providers highlighting that new data center proposals submitted to their investment committees must be tied to a renewable energy strategy. Without this, the proposal is less likely to be approved.

Where water is concerned, data center investment decisions also need to consider the massive volumes of water necessary for cooling. This can create financial, operational, and reputational risks, particularly in water-scarce areas. Investors and regulators in some parts of the world are beginning to scrutinize water-intensive designs, while operators face potential project delays and increased costs.



Data centers cost a lot. We need them a lot. And there is a strong potential for growth in Asia.

– *Rahul Agrawal, Head of Energy Business for Southeast Asia, Actis*

With data centers, it's probably more about water scarcity than excess water. Not all capital providers may understand their exposure to some of these risks. All of this suggests that there's going to be some challenges, but challenges are also opportunities.

– *Tony Goldner, Chief Executive Officer, TNFD*



Asia is always an inference center where you have a lot of population, you have a lot of demand, so you cannot ignore some of the developing parts of it. As a capital supplier, we always zoom in into the developing parts of these markets and think about how we can strategically work with the local business partners to provide capital.

– Shen Chenhua, Fund Partner, I Squared Capital

Valuation

Valuing a data center for project financing is a complex process that blends traditional real estate and infrastructure valuation with technical performance metrics specific to the industry. Unlike standard property valuation, a data center's value is driven by its power capacity and highly predictable cash flows from long-term contracts, particularly with creditworthy hyperscaler clients.

Liquidity

Financing for data centers is primarily driven by strong market demand, especially for AI-related infrastructure, which helps attract significant investment. However, the illiquid nature of data centers as specialized real estate assets presents significant challenges to market liquidity, requiring developers and investors to use tailored financial products to manage risk and attract capital.

Structured finance products such as asset-backed securities can help overcome these challenges. By securitizing a portfolio of data center leases, developers can create more liquid financial instruments (bonds) that are attractive to a broader range of investors. This can help manage risk and improve overall market liquidity.

Financial Solutions as a Catalyst



Understanding Specific Financing Needs

As the world relies more on big data and AI, the demand for data centers will continue to grow. Financiers are thus an instrumental part of the ensemble to bring this increasingly digitalized future to reality – and the financing solutions for data centers will need to match the scale and scope of the specific financing.

We at SMBC are committed to scaling solutions that balance innovation with accountability. Through our suite of sustainable finance solutions, we support renewable energy deployment, water supply and recycling, new technologies, as well as digital investments for AI which optimize efficiency and productivity overall.

SMBC's approach is grounded in collaborative dialogue, allowing us to understand each client's unique requirements and address their capital needs with bespoke solutions – while also taking into account the local regulatory landscape, electricity markets, and grid conditions.

SMBC has a comprehensive approach to supporting clients seeking capital for data centers:

- One-stop solutions provider
- Ability to leverage loan capital markets
- Sustainable finance solutions
- New energies and new technologies



One-Stop Solutions Provider

SMBC is experienced in supporting energy projects in the Asia Pacific region. We are a one-stop solutions provider with a suite of ancillary service offerings.

Preferred partner

SMBC's deep capabilities extend across different asset classes including solar, onshore and offshore wind, battery energy storage systems, hydropower, transmission and distribution, gas-fired power plants, and more.

Our dedicated sector teams support early-stage development projects through multi-product offerings and financial advisory – and we work to structure, underwrite and arrange complex financing transactions for greenfield and brownfield projects.

Global recognition

SMBC was recognized as the Project Finance House of the Year in 2024 by The Asset (Globally, Asia Pacific and Japan), and has been named the Global Bank of the Year eight consecutive times by Project Finance International.

With a proven track record and in-depth sector expertise in structured finance, power markets across various geographies and asset classes, SMBC stands ready to support clients at various capital sourcing stages.

SMBC works with clients to mitigate risks and anticipate challenges associated with their projects, which can help to bridge gaps in bankability. We do this by leveraging our network of commercial lenders, export credit agencies and multilateral development banks.

Deal Highlight:

Fengmiao 1 Offshore Wind Project



Fengmiao I is a 495 MW greenfield offshore wind project developed by Copenhagen Infrastructure Partners. Situated in Taichung, Taiwan, it is scheduled to complete construction by the end of 2027.

SMBC acted as the sole Green Loan Coordinator for Fengmiao I in 2025, with US\$3.1 billion mobilized as green loan financing. SMBC was also selected for ancillary roles such as Mandated Lead Arranger, Hedging Bank (including Deal Contingent Hedging), Technical Bank and Sole Green Loan Coordinator.

This project demonstrates SMBC's extensive range of services, tailored to meet customer requirements and to help them explore innovative forms of financing. Additionally, this transaction marks the 10th offshore wind transaction that SMBC has financed and advised in the Asia Pacific region.

Fengmiao I is Asia's and Taiwan's first offshore wind project to be financed through a diversified corporate Power Purchase Agreement (cPPA), which departs from the traditional approach of relying on a single utility offtaker to purchase electricity from the project throughout the entirety of its operations.

Under the cPPA, blue-chip companies committed to purchasing electricity from Fengmiao I. One of the offtakers in the cPPA is Google in Taiwan. Once operational in 2027, Fengmiao I will power Google's data centers, cloud region and offices in Taiwan.

Ability to Leverage Loan Capital Markets

To advance an AI-driven future, it is essential to develop robust and scalable infrastructure, with the strategic expansion of data center capacity at the forefront.

Without sufficient capacity, the pace of AI innovation risks being constrained by infrastructure bottlenecks. At the same time, the abundance of liquidity in debt capital markets presents an opportunity for project sponsors and developers to secure more competitive financing for their data center construction.

SMBC's team of loan market experts leverage their broad market experience and investor relationships to help meet each client's unique financing needs.

Deal Highlight:

AirTrunk Data Center Financing



AirTrunk is the largest hyperscale focused data center platform in the Asia Pacific (excluding Japan) region, with a presence across key APAC markets such as Australia, Japan, Hong Kong, Malaysia, and Singapore.

In 2024, SMBC was the Financial Advisor and Lead Structuring Bank to Blackstone and CPP Investments on their acquisition of AirTrunk. This deal was the largest Australian M&A deal of 2024 and highlighted the growing demand for digital infrastructure in the region.

In 2025, AirTrunk successfully closed an A\$16 billion sustainable financing which comprised of four individual transactions, structured as either green loans or sustainability-linked loans (SLLs). The multi-transaction financing covers key greenfield and operational assets across Australia, Hong Kong, Malaysia, and Singapore.

SMBC served as the Lead Structuring Bank, Left Lead Arranger, Mandated Lead Arranger, and Bookrunner for the Southeast Asian term loan financing; and actively collaborated with the project sponsors to secure underwriting commitments from the MLABs. SMBC also led the documentation process on behalf of the lenders.

As one of the selected active MLABs for the financing, SMBC played a key role in the eventual success of the general syndication process, which was heavily oversubscribed by a group of regional and international banks.

Sustainable Finance Solutions

Supporting Clients in Their Journeys

SMBC offers a spectrum of sustainable finance solutions that can support clients in their decarbonization and transition goals.

SMBC’s sustainability products and instruments include green deposits; green, social and sustainability loans; sustainability-linked loans (SLLs); sustainability-linked trade finance and derivatives; sustainable transaction banking instruments, and more.

Within the Asia Pacific, as a value-added service, SMBC is also able to support clients that require advice on their sustainability strategies and transition finance strategies.

Sustainability-Linked Loans

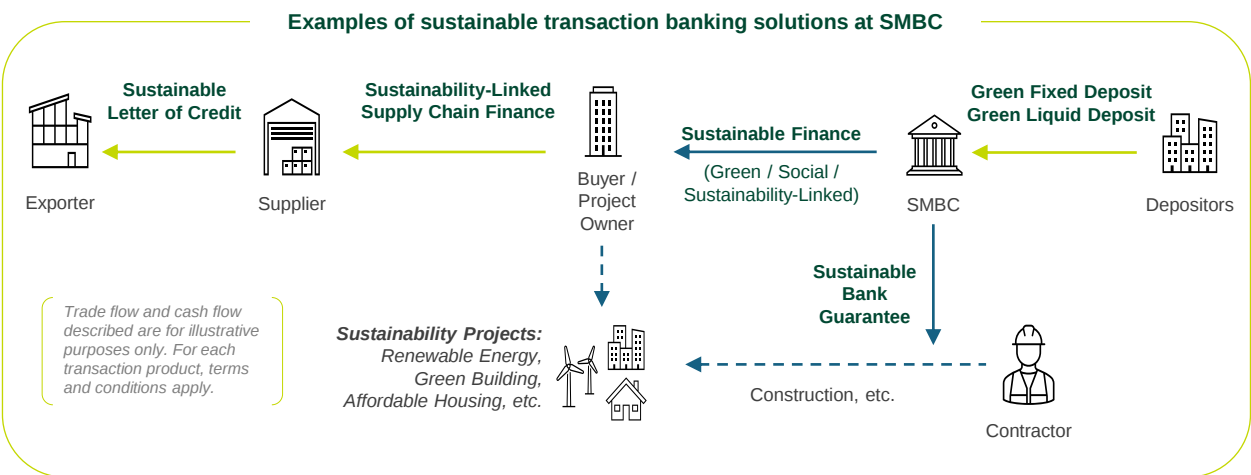
While the expansion of digital infrastructure remains critical to supporting the demands of an AI-driven economy, it is equally important to ensure that the operations of such facilities are sustainable. Factors such as energy efficiency and the integration of renewable resources must therefore be regarded as priorities alongside capacity growth.

SMBC has a role to play in advancing this agenda by shaping market behavior through financing structures such as SLLs, which provide sponsors with tangible economic incentives to adopt more sustainable practices.

SLLs are a growing form of financing for AI data centers. These loans incentivize data center companies to improve their performance by tying the interest rate to achieving specific sustainability targets.

Our Suite of Sustainability Solutions

	Deposit		Sustainability – Use of Proceeds				Sustainability-linked			Other services	
Type	Green Deposit	Green Loans	Social Loans	Sustainability Loan (Green + Social UoP)	Green Trade Finance & Green Guarantee		Loans	Trade Finance	Derivatives	Sustainability Strategy*	Transition Finance Strategy



Note: This diagram does not represent an exhaustive list of sustainable finance offerings at SMBC. Kindly note that green deposits are applicable for group companies outside of Indonesia.

New Energies and New Technologies

Understanding project risks

There are a variety of risks and challenges that can arise when scaling up new energy and new technology projects – such as operational risks, a mismatch with market demand for the product, and increased funding needs. Financing solutions thus need to be cognizant of the varied risk and return profiles to be fit for the specific purpose.

New energy exploration

SMBC's approach is to support worthwhile risk-taking in new energies and new technologies in order to help accelerate adoption across the region. SMBC takes a comprehensive approach, leveraging our project finance solutions, business co-creation opportunities and equity investment avenues.

Active player and interconnector

With our vast network of country offices across the Asia Pacific, SMBC remains connected and updated on energy security and transition policies throughout the region.

In Japan, SMBC participates actively in industry groups focused on exploring the adoption of new technologies. Notably, SMBC was one of the first members to join the Japan Hydrogen Association (JH2A) and supports the JPY60 billion Japan Hydrogen Fund which is focused on promoting hydrogen supply chain projects, in line with Japan's carbon neutrality goals for 2050 and the country's energy strategy to reduce fossil fuel reliance by 2030.

Deal Highlight:

Advancing Hydrogen-Fueled Capacity



Pursuing best-in-class energy technology

SMBC financed the Keppel Sakra Cogen (KSC) Plant in 2023, Singapore's first hydrogen-ready 600 MW combined-cycle gas turbine (CCGT) power plant, located on Jurong Island.

Set to be operational in 2026, the plant will run initially on natural gas and gradually transition to hydrogen-based fuels when available.

The plant integrates the latest aerodynamics, cooling design and material technologies which will enable the CCGT to be the most energy-efficient plant of its kind in Singapore.

Supporting Singapore's energy transition

Singapore's National Hydrogen Strategy recognizes that hydrogen can be a significant decarbonization pathway to support the country's transition towards net zero by 2050. The KSC plant is a landmark project which can help support this transition. It is projected to generate significantly less greenhouse gas emissions for the equivalent power generated using natural gas, abating an estimated more than 6 million tons of emissions over its useful life.

New technologies such as this are considered one avenue to help Singapore future-proof its power generation capacity as the existing gas fleet ages and is gradually retired.

Looking Ahead



AI's rapid growth poses significant challenges to environmental sustainability, necessitating comprehensive strategies that consider a host of interconnected factors.

Sustainable AI growth hinges on a range of considerations – including access to energy and water, design and innovation, collaboration and multi-sector partnership, the local regulatory landscape, and efficient capital deployment.

Key Takeaways

Access to energy and water

AI's swift expansion has fueled surging demand for data centers and computing power, including in the Asia Pacific's booming digital economies. This growth places considerable pressure on energy and water resources – essential inputs for data center operations.

Reliable access to clean, affordable energy is critical as electricity consumption increases to meet growing AI workloads. Water for cooling further strains local supplies, raising concerns about scarcity in vulnerable regions. These dual challenges underscore the urgent need for efficient management of energy and water to support sustainable AI development.

Design and innovation

Roundtable participants also emphasized the importance of design and innovation in helping to mitigate AI's environmental impact and address resource constraints. At the same time, AI-driven systems can help to optimize energy and water use through automation and predictive analytics. Looking ahead, emerging and yet-to-be-invented AI-driven technologies may hold the key to more sustainable and efficient AI systems for the future.

Evolving regulatory landscape

Governments play a critical role in AI sustainability by establishing regulatory frameworks, providing funding and incentives for green data center development, driving cross-border collaboration, fostering public-private partnerships, etc.

The regulatory landscape is evolving, with current AI policies mainly addressing ethics, privacy, and data security, while sustainability regulations focusing on environmental risks are relatively nascent.

Collaboration and multi-sector partnerships

Roundtable participants stressed the importance of collaboration and multi-sector partnership among developers, investors, energy providers, customers, and regulators to overcome sustainability challenges. Partnerships are vital to unlocking investment and delivering integrated solutions that balance AI growth with sustainability goals.

Financing sustainable AI infrastructure

Financing sustainable AI infrastructure requires substantial investment. Financial institutions can play a role in enabling environmentally responsible AI development. Investors, for example, increasingly demand clear renewable energy commitments and water risk management strategies.

SMBC offers tailored financing solutions to support data center sustainability. Leveraging its expertise and networks, SMBC helps clients navigate complex environments and manage risks.

New frontiers

The roundtable participants affirmed that AI has opened new frontiers in discovery and problem-solving across diverse fields, with the potential to accelerate advancements in science, healthcare, and sustainability.

AI's rapid growth also poses significant challenges to environmental sustainability, necessitating comprehensive strategies that consider a host of interconnected factors, including access to energy and water, design and innovation, collaboration and multi-sector partnership, the local regulatory landscape, and efficient capital deployment.

Towards a Resilient, Forward-Looking Ecosystem

As the world accelerates toward an AI-driven economy, digital infrastructure is becoming one of the defining investments of our time. Alongside the unprecedented potential of AI lies an equally unprecedented responsibility, to ensure this transformation is sustainable, equitable, and aligned with climate goals.

In 2024, data centers consumed an estimated 1-1.5% of global electricity.⁽²²⁾ That share is forecasted to double. This is the computing backbone of the future.

The rise of AI places new pressure on power grids, water systems, and global supply chains. One ChatGPT query may seem trivial. Yet researchers have found that 10-50 ChatGPT requests can consume up to 500 milliliters of water, amplified across billions of interactions each day.⁽²³⁾ The environmental impact of digital infrastructure is no longer abstract. It is real, measurable, and growing.

But this is not a call for restraint. It is a call for action.

At SMBC, we believe innovation and sustainability must move forward together. Our role is not only to finance data center growth, but to shape it. Through green loan structuring, corporate PPAs, and sector-specific financing models, we enable projects that are bankable, resilient, and aligned with long-term environmental outcomes.

AI and data centers are now driving tremendous renewable energy demand, especially in emerging markets.

Sustainable data center development must be seen through a multi-dimensional lens, addressing energy intensity, water constraints, spatial challenges, and regulatory bottlenecks. This demands integrated solutions. It demands flexible capital. And it demands partners who understand how to connect clean technology with long-term financial viability.

The choices we make today will define the systems of tomorrow.

That is why we are proud to work alongside governments, industry leaders, and innovators to ensure the digital infrastructure that powers AI also powers a more sustainable future. There is no silver bullet, but if innovation got us here, it could also help us navigate the future. And that belief drives every step we take toward building a resilient, forward-looking ecosystem.



I see SMBC's mission clearly: To be a catalyst, bridging private capital, public policy, and innovation to drive sustainable infrastructure at scale.

– Masayuki Takanashi, Chief Sustainability Officer (CSuO), SMBC Group

About the Report



About the Report



Recent advancements in AI have spurred growing demand in the Asia Pacific for data center and renewable energy project financing. SMBC recognizes that financial institutions have a role to play in supporting open dialogue on how AI can grow without impeding sustainability goals.

At Ecosperity Week 2025, SMBC engaged a cross-section of experts in a roundtable session to help shed light on the key challenges faced by ecosystem stakeholders in balancing AI growth with sustainability objectives in the region, as well as to consider the potential role of financial institutions in enabling a more sustainable AI future.

In this paper, SMBC leverages its expertise in both banking and sustainable finance to help advance the conversation in the region.

This paper also underscores SMBC’s strategic partnerships with leading technology and energy sector stakeholders as we collectively advance a vision for a more sustainable, tech-ready, and resilient future.

Roundtable Participants

Katsufumi Uchida

Head of Asia Pacific Division
SMBC Asia Pacific

Masayuki Takanashi

Group Chief Sustainability Officer
SMBC Group

Yuji Fukuda

Co-Head of Structured Finance Department
SMBC Asia Pacific

Shinichiro Yamazaki

Head of Transaction Banking
SMBC Asia Pacific

Vishesh Gupta

Head of APAC TMT, Consumer &
Healthcare, Sector Banking
SMBC Asia Pacific

Serene Tan

Head of New Energies
SMBC Asia Pacific

Rahul Agrawal

Head of Energy Business for Southeast
Asia, Actis

Chua Yong Hwee

MD, Energy Nexus
Keppel Limited

Mohamad Faeze

Manager, Business Development Division
IHI Asia Pacific

Nicole Goh

Head, Infrastructure, Asia,
GIC

Tony Goldner

Chief Executive Officer
TNFD

Kim Yoon Young

Cluster President, Singapore and Brunei
Schneider Electric

Michio Kotegawa

SVP, Financial Solutions Business Unit
NEC Asia Pacific

Rob Lomas

Head of Corporate Development
AirTrunk

Spencer Low

Head of Regional Sustainability
Google

Kavickumar Muruganathan

Cloud ESG Planning Director
Microsoft

Amy Park

Director, Investor Solutions
Morrison

Shen Chenhua

Fund Partner
I Squared Capital

Vinamra Srivastava

Chief Sustainability & Sustainable
Investments Officer, CapitaLand

Matt Stanelos

Director On-site Services
Veolia South East Asia

Yinglun Teng

Energy Analyst
IEA

Grégory Thomassin

Head of Business Development
TotalEnergies Renewables

Egon van der Hoeven

President Low Carbon Solutions Asia
Pacific, ExxonMobil Asia Pacific Pte. Ltd.

References

- (1) Tiku, N., De Vynck, G., & Oremus, W. (2023, January 27). Big tech was moving cautiously on AI. Then came ChatGPT. The Washington Post. <https://www.washingtonpost.com/technology/2023/01/27/chatgpt-google-meta/>
- (2) International Energy Agency. (2025). Energy and AI. IEA. <https://www.iea.org/reports/energy-and-ai>
- (3) Google, Temasek, & Bain & Company. (2022). e-Conomy SEA 2022: Through the waves, towards a sea of opportunity. https://services.google.com/fh/files/misc/e_conomy_sea_2022_report.pdf
- (4) Deloitte Southeast Asia. (2024). Southeast Asia AI and data centres: Unlocking US\$1 trillion GDP opportunity by 2030. <https://www.deloitte.com/southeast-asia/en/Industries/tmt/perspectives/sea-ai-data-centres.html>
- (5) Tech in Asia. (2025, August 18). Malaysia's Johor data center capacity set to reach 5,800 MW. <https://www.techinasia.com/news/malaysias-johor-data-center-capacity-set-to-reach-5800-mw>
- (6) The Straits Times. (2024, October 14). South-east Asia emerges as global data centre hot spot as AI usage rises. <https://www.straitstimes.com/business/south-east-asia-emerges-as-global-data-centre-hot-spot-as-ai-usage-rises>
- (7) CBRE Research. (2024, October). Australia Data Centres. CBRE, Inc. <https://mktgdocs.cbre.com/2299/51ad65f2-603f-4db2-9ad1-d37671aa3a68-657507533/v032024/australia-data-centres-2024.pdf>
- (8) CBRE. (2024, October 2). *Australia's data centre investable universe set to double in four years - CBRE*. Commo. <https://www.commo.com.au/news/2024/10/02/australia%E2%80%99s-data-centre-investable-universe-set-double-four-years-cbre/1727830600>
- (9) Noffsinger, J., Goodpaster, M., Patel, M., Chang, H., Sachdeva, P., & Bhan, A. (2025). The cost of compute: A \$7 trillion dollar race to scale data centers. The McKinsey Quarterly. <https://www.mckinsey.com/industries/technology-media-and-telecommunications/our-insights/the-cost-of-compute-a-7-trillion-dollar-race-to-scale-data-centers>
- (10) International Energy Agency. (2025). Energy and AI. IEA. <https://www.iea.org/reports/energy-and-ai>
- (11) International Energy Agency. (2025). Energy and AI. IEA. <https://www.iea.org/reports/energy-and-ai>
- (12) Krämer, K. (2023, November 28). AI & robotics briefing: Data centres' huge 'water footprint' becomes clear amid AI boom. Nature. <https://www.nature.com/articles/d41586-023-03768-y>
- (13) Bolgar, C. (2025, September 24). AI chips are getting hotter: A microfluidics breakthrough goes straight to the silicon to cool up to three times better. Microsoft Source. <https://news.microsoft.com/source/features/innovation/microfluidics-liquid-cooling-ai-chips/>
- (14) Jennings, C. (2025, July 23). The cloud is drying our rivers: Water usage of AI data centers. EthicalGEO. <https://ethicalgeo.org/the-cloud-is-drying-our-rivers-water-usage-of-ai-data-centers/>
- (15) Business Today Malaysia. (2025, August 11). Johor launches Malaysia's first large-scale water reclamation plant for data centres. <https://www.businesstoday.com.my/2025/08/11/johor-launches-malaysias-first-large-scale-water-reclamation-plant-for-data-centres/>
- (16) ASEAN Secretariat. (2024). ASEAN Guide on AI Governance and Ethics. <https://asean.org/storage/2024/03/ASEAN-Guide-on-AI-Governance-and-Ethics.pdf>
- (17) Singapore Government. (2024). Green Data Centre Roadmap. <https://www.imda.gov.sg/news-and-events/Media-Room/Media-Releases/2024/green-data-centre-roadmap-launched>
- (18) Building and Construction Authority & IMDA. (2024). Green Mark for Data Centre Scheme. <https://www.bca.gov.sg/greenmark/green-mark-data-centre.html>
- (19) ASEAN Centre for Energy. (2023). ASEAN Power Grid: Enhancing regional energy integration. <https://aseanenergy.org/asean-power-grid/>
- (20) Ministry of Trade and Industry Singapore. (2024, December 13). U.S.-Singapore civil nuclear cooperation agreement enters into force. <https://www.mti.gov.sg/Newsroom/Press-Releases/2024/12/US-Singapore-Civil-Nuclear-Cooperation-Agreement-Enters-into-Force>
- (21) U.S. Congress. (2022). Creating Helpful Incentives to Produce Semiconductors (CHIPS) and Science Act. <https://www.congress.gov/bill/117th-congress/house-bill/4346>
- (22) International Energy Agency. (2024). Data centres & networks. IEA. <https://www.iea.org/energy-system/buildings/data-centres-and-data-transmission-networks>
- (23) Li, P., Yang, J., Islam, M. A., & Ren, S. (2025). Making ai less 'thirsty'. Communications of the ACM, 68(7), 54-61. [Making AI Less 'Thirsty' | Communications of the ACM](https://doi.org/10.1145/3700000)

Disclaimer

The contents of this document are for discussion purposes only. All information and opinions contained in this document (“Information”) should not be construed as legal, regulatory, financial, investment, tax, or accounting or other technical or professional advice. Recipients of this document (“Recipients”) should make their own independent appraisal and/or risk assessment of the Information and seek independent legal, tax and/or other expert advice before embarking on any course of action.

Although the Information is obtained from sources considered as reliable by SMBC, SMBC makes no representation or warranty as to, and accepts no liability in relation to, the accuracy or completeness of the Information or for any loss or damage arising from any reliance on the Information. SMBC has no responsibility to update any Information. The Information may change without prior notice.

Nothing contained in this document is intended to be, nor should be construed as, a recommendation, solicitation or offer of any product, service, investment, financing or other banking facilities. The contents of this document are confidential and shall not be disclosed to any other party or person without SMBC’s prior written consent.